USSR

IVAKHNENKO, A. G., LAPA, V. G.

UDC: 519.24(02)

"Prediction of Random Processes"

Predskazaniye sluchaynykh protsessov (Prediction of Random Processes), Kiev, "Naukova dumka", 1971, 416 pp, ill. 3 r. 47 k. (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V421 K)

[No abstract]

1/1

IVAKHNENKO, A.G.

Mathematics

POLYNOMIAL ALGORITHMS OF THE THEORY OF STATISTICAL
CLASS RECOGNITION PROBLEMS

[Article by A. G. Ivakhnenko]

The theory of statistical recognition

In accordance with the basic idea of the
proposed that the

The complete description (algorithm) has the known form:

$$z(x) = \sum_{i=1}^{n} c_i \Delta(x|z_i) \cdot \varphi(z_i)$$

where

$$\varphi(z_i) = \varphi_1(x_1) \cdots \varphi_n(x_n) \cdot \varphi_0(z_i)$$

the

$x_1, \ldots, x_n$ are discrete arguments $(x_i = 1, \ldots,$
number of distillation levels);

- 55 -

USSR

IVAKHNENKO A. G.; TODUA, M. N.

"Problems of Statistical Prediction of Random Processes According to the Principles of Self-Organization of Prediction Equations"

Kiev, Avtomatika; May-June, 1972; pp 46-66

ABSTRACT: In previous studies the principle of self-organization was applied to solve problems of short-term (one-two years) prediction of random processes by data sampling. The article deals with finding, on the basis of the principle of self-organization, optimal algorithms and methods of their regularizations for the problem of mean-term (Part I) and long-term (Part II) prediction. A random process is presented as the sum of a "trend" (time function) and a "remainder" (function of many independent variables). To determine the equation of trend regression a method of "purposeful regularization" is recommended; and to determine the remainder expression, another method ("combined regularization"). The recommendations are tested by means of two examples of prediction (the discharge of water into the Dnepr River and the industrial capacity of Great Britain).
1/1

USSR

UDC 62-50.23

IVAKHRENKO, A. G., CHUKIN, YU. V., Kiev

"Purposeful Regularization in Problems of Short-Term and Medium-Range Prediction Solved by Distinguishing the Trend of Optimal Complexity"

Kiev, Avtomatika, No 1, 1972, pp 50-57

Abstract: A calculation of an example of predicting the degree of load of England's production showed that by selecting certain methods of purposeful control, the accuracy of medium-range prediction for 3-5 years can be raised almost to the accuracy of short-term prediction for only one year. Purposeful control for medium-range prediction may consist of using the most recent years for the learning sequence and data for several years over a time equal to one-half the "coherence time" for a check sequence.

1/1

1/2   018

UNCLASSIFIED

TITLE--HEURISTIC SELF ORGANIZATION IN PROBLEMS OF ENGINEERING CYBERNETICS

PROCESSING DATE--27NOV70

-U-

AUTHOR-- IVAKHNENKO, A. G.

COUNTRY OF INFO--USSR

SOURCE--AUTOMATICA (GB), VOL. 6, NO. 2, P. 207-219 (MARCH 1970)

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DATA PROCESSING, RANDOM PROCESS, ENGINEERING CYBERNETICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0151

STEP NO--UK/0000/70/006/002/0207/0219

CIRC ACCESSION NO--AP0130913

UNCLASSIFIED

CIRC ACCESSION NO--AP0130913   UNCLASSIFIED   PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SYSTEMS, OR PROGRAMS, OF HEURISTIC SELF ORGANIZATION ARE DEFINED AS THOSE WHICH INCLUDE THE GENERATORS OF RANDOM HYPOTHESES, OR COMBINATIONS, AND SEVERAL LAYERS OF THRESHOLD SELF SAMPLING OF USEFUL INFORMATION. THE COMPLEXITY OF COMBINATIONS INCREASES FROM LAYER TO LAYER. A KNOWN SYSTEM, ROSENBLATT'S PERCEPTION, MAY BE TAKEN AS AN EXAMPLE. THE GROUP METHOD OF DATA HANDLING (GMDH) BASED ON THE PRINCIPLES OF HEURISTIC SELF ORGANIZATION IS DEVELOPED TO SOLVE COMPLEX PROBLEMS WITH LARGE DIMENSIONALITY WHEN THE DATA SEQUENCE IS VERY SHORT. TWO EXAMPLES ARE GIVEN TO ILLUSTRATE HOW THIS METHOD APPLIES TO PROBLEMS OF PREDICTING RANDOM PROCESSES AND TO IDENTIFYING CHARACTERISTICS OF A MULTIEXTREMUM PLANT.   FACILITY: INST. CYBERNETICS, KIEV. USSR.

UNCLASSIFIED

1/2   022

CIRC ACCESSION NO--AP0125838   UNCLASSIFIED   PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE SYSTEMS, OR PROGRAMS, OF
HEURISTIC SELFORGANIZATION ARE DEFINED AS THOSE WHICH INCLUDE THE
GENERATORS OR RANDOM HYPOTHESES, OR COMBINATIONS, AND SEVERAL LAYERS OF
THRESHOLD SELFSAMPLING OF USEFUL INFORMATION.   THE COMPLEXITY OF
COMBINATIONS INCREASES FROM LAYER TO LAYER.   A KNOWN SYSTEM,
ROSENBLATT'S PERCEPTRON, MAY BE TAKEN AS AN EXAMPLE.   THE GROUP METHOD
OF DATA HANDLING (GMDH) BASED ON THE PRINCIPLES OF HEURISTIC
SELFORGANIZATION IS DEVELOPED TO SOLVE COMPLEX PROBLEMS WITH ALRGE
-DIMENSIONALITY WHEN THE DATA SEQUENCE IS VERY SHORT.   TWO EXAMPLES ARE
GIVEN TO ILLUSTRATE HOW THIS METHOD APPLIES TO PROBLEMS OF PREDICTING
RANDOM PROCESSES AND TO IDENTIFYING CHARACTERISTICS OF A MULTIEXTREMUM
PLANT.   FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, INSTITUT
KIBERNETIKI, KIEV, UKRAINIAN SSR.

UNCLASSIFIED

USSR

UDC 632.95.028:519.2

IVAKHNENKO, A. G., SPYNU, YE. I., PATRATIY, I. Z., IVANOVA, L. N., All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics and the Cybernetics Institute of the Ukrainian SSR Academy of Sciences, Kiev

"Mathematical Forecasting of the Degradation Time of Pesticides in Plants by the Probability Algorithms of the Grouped Argument Method"

Abstract: A study was made of one of the elements of a generalized mathematical model reflecting the multifactor dependence of the process of propagation and disappearance of pesticides in various parts of the environment with indication of forecasting the degradation time of the pesticides in plants. A set of pesticides was divided into classes with respect to duration of their degradation the function of 22 attributes including the physical-chemical properties, parameters characterizing the crop and the conditions of applying the pesticide to it, and also of the meteorological conditions. Three digitalization levels were introduced, and simple recognition formulas were obtained which can be used for manual calculations and to discover the pesticide dynamics in the case of multiple combination of the indicated factor with an accuracy up to 80%. The recognition formula in the logarithmized form appears as follows:
1/2

USSR

IVAKHNENKO, A. G., et al., Gigiyena Sanitariya, No 10, 1972, pp 43-48

$$\ln(P_{ai}) = \ln[P(X_1 X_{10}/R_i)] = \ln[P(X_2 X_3/R_i)] + \ln[P(X_2 X_4/R_i)] +$$
$$+ \ln[P(X_3 X_4/R_i)] + \ln[P(X_3 X_{13}/R_i)] + \ln[P(X_4 X_{10}/R_i)] +$$
$$+ \ln[P(X_4 X_{19}/R_i)] + \ln[P(X_5 X_6/R_i)] + \ln[P(X_6 X_{21}/R_i)] +$$
$$+ \ln[P(X_9 X_{17}/R_i)] + \ln[P(X_{13} X_{18}/R_i)].$$

where $P(X_k X_\ell/R_i)$ is the probability of the appearance of combinations of attributes in the i-th class. The data indicate that the mathematical models can satisfactorily replace the complex and limited production studies lasting two years and more.

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USSR

IVAKHNENKO, A. G., STETSNEKO, N. D., and SVETAL'SKIY, B. K. (Kiev)

"The Structural Objective Identification of the Process of Photosynthesis by Methods of Self-Organization"

Abstract: One of the authors of the article (N. D. Stetsenko) has developed methods and apparatuses for the multiple observation of the photosynthesis of organic substances and has carried out these investigations with corn leaves.

The other two authors (A. G. Ivakhnenko and B. K. Svetal'skiy), using the experimental data obtained, applied their cybernetic method to the self-organization of mathematical modeling of this process. As a result, two mathematical models of the photosynthesis were obtained (for two methods of supplying plants with moisture).

Both models proved to be nonlinear, combined, open-closed automatic control systems with delayed arguments which agree closely with physiological con-cepts on photosynthesis.
1/2

USSR

IVAKHNENKO, A. G., et al., Avtomatika, November-December 1972, pp 23-32

The models can be used for the prediction and optimal control of photosyn-
thesis for the purpose of increasing productivity.

The article includes a number of equations, two figures, and two tables.
There are 11 bibliographic references.

2/2

USSR

IVAKHNENKO, A. G., DIMITROV, V. D., GULYAN, N. V., IVAKHNENKO, L. N.

"Problems of Modeling of Complex Objects on the Basis of Heuristic Self-Organization"

Abstract: A number of trends in cybernetics concern the problem of modeling of complex objects. The authors show that in spite of the differences in initial assumptions, all of these trends can be reduced to the creation of very complex objects, the quality of which is determined by the extent to which they can "learn" rapidly: i.e., the extent to which they can "construct an internal model of an external situation." Models studied include the Gabor predicting filter, the Kalman filter, the perceptron, and neuron networks.

1/1

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USSR   UDC 621.373.531.3(088.8)

IVAKHNENKO, M. M., PANCHENKO, V. A., SAYENKO, V. M., PROKHORCHUK, YE. F.

"Controlled Trapezoidal Oscillator with an Exponential Decay"

USSR Author's Certificate No 275111, Filed 10 Jul 68, Published 15 Oct 70 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4G234P)

Translation: An oscillator made of magneto-transistor elements is proposed. It contains two transistors and two magnetic toroidal cores included in a balanced circuit. In order to reproduce the proper shape of the exponential decay and keep the pulse amplitude invariant during the period of variation of the coefficient of the exponent and during the process of variation of the output signal frequency, a saturation choke with binary control is connected to the common collector circuit of the transistor in series with the power supply and the secondary information sensor. The first control winding is connected to the first information circuit and forms an auxiliary electrical and magnetic coupling, and the second winding is connected to the second information circuit opposite, and it forms only a magnetic coupling together with the collector circuit.

1/1

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USSR

UDC: 621.317.757

IVAKHNENKO, M. K., TSYGANKASH, V. Ye., Dnepropetrovsk State University

"A Signal Analyzer"

Moscow, Otkrytiva, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 11, 1970, Author's Certificate No 266013, filed 23 Apr 68, p 54

Abstract: This author's certificate introduces: 1. A signal analyzer which contains two identical controllable tank circuits with a demodulator, controllable inductor and independent control circuit each. As a distinguishing feature of the patent, the analyzer is designed for synchronous isolation of the dependent frequency spectrum of the signal, determining the dependence of the gain and the time constant of an element with limited zone of linearity on the signal to be analyzed, and correction of the basic characteristics of the element for dynamic error. Incorporated in the analyzer is a three-tank controllable generator of sinusoidal oscillations based on ferrodiode elements with two transistors. The analyzer also contains a controlled symmetric corrector whose working windings are connected in series with the windings of the second feedback circuit of the controlled oscillator. Both controllable tank circuits are connected in parallel with each other and in parallel with the output of the controlled oscillator. The load resistor is connected to the outputs of the demodulators, which are

1/2

USSR

IVAKHNENKO, M. M., et al, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 11, 1970

connected in a differential circuit. 2. A modification of this analyzer whose distinguishing feature is stabilization of the amplitude of the output signal from the controlled oscillator when its frequency changes. Series-connected tank circuits are installed in the collectors of the controlled oscillator transistors. One is a series resonance tank, and the other is a parallel resonance tank. The windings of these tank circuits are inductively coupled to the windings of the feedback circuits.

2/2

1/2   014   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--INSTABILITY OF THE PHONON SYSTEM IN SEMICONDUCTOR CRYSTALS IN
PULSED ELECTRIC FIELDS --U-
AUTHOR--IVAKHNO, V.N.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(2), 609-11

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SEMICONDUCTOR CRYSTAL, PHOTON INTERACTION, ELECTRIC FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0260   STEP NO--UR/0181/70/012/002/0609/0611

CIRC ACCESSION NO--AP0105334
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0105334
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MODEL IS DISCUSSED WHICH IS .
  CAPABLE OF EXPLAINING THE BASIC PECULIARITIES OF INSTABILITY OF THE
  PHONON SYSTEM. THE POSSIBLITY WAS CONSIDERED OF THE APPEARANCE OF
  INSTABILITY OF THE PHONON SYSTEM RELATED TO DRAG OF PHONONS BY ELECTRONS
  AND DISCONTINUITIES IN THE ELEC. FIELD IN THE CRYSTAL. AT LOW TEMP.,
  THE PHONON DRAG BECOMES VERY INTENSE IN SEMICONDUCTORS WHEN, IN
  SCATTERING OF CARRIERS, ONLY PHONONS WITH SMALL VALUES OF THE WAVE
  VECTOR PARTICIPATE. INCREASE IN TEMP. LEADS TO AN INCREASE IN THE NO.
  OF FLOPOVERS IN THE PHONON SYSTEM, AND ALSO PHONON PHONON COLLISIONS.

UNCLASSIFIED

Pharmacology and Toxicology

USSR

MIKHAYLOV, N. Ye., IVAKHNIKOVA, I. G., VOLGINA, A. V., and STUKOVA, I. A.

"Action of Methyl Ester of Acrylic Acid on an Organism After Inhalational Administration"

Translation: A study was made of the activity in blood of cholinesterase, catalase, and the content of SH-groups, G-SH, and Hb in rats subject to inhalational intoxication with the methyl ester of acrylic acid (I; 5-50 mg/m^3; 4 hours). The activity of cytochromoxidase was determined after seven months in liver and brain homogenates, while the activity of succinated hydrogenase was determined in liver homogenates. Determinations were also made of the vitamin C and cholesterol concentrations in blood serum. The toxic effect of I at a concentration of 50 mg/m^3 was shown; reduced redox reactions and threshold effect on the gonads was observed at a concentration of 20 mg/m^3. Concentrations of 10 and 5 mg/m^3 were not toxic.

1/1

TITLE--CONVERSION OF CYANO TERTIARY AMINO DIENES INTO SUBSTITUTED
   AMINOPYRIDINES. NEW INTRAMOLECULAR REARRANGEMENT -U-

AUTHOR-(03)-PERVEYEV, F.YA., IVAKHNYUK, M.S., KOSHMINA, N.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(5), 1116

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PYRIDINE, CHEMICAL SYNTHESIS, INTERMOLECULAR COMPLEX, TERTIARY
   AMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1286   STEP NO--UR/0366/70/006/005/0001/1116

CIRC ACCESSION NO--AP0134960
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0134960

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF R SUB2 NH (R IS
ET, PR, BU) WITH MEC:CCME:CHCN AT 100DEGREES GAVE R SUB2 NCME:CHCME:CHCN
(I). HEATING I IN A SEALED TUBE WITH A FEW DROPS OF WATER GAVE 2, (R
SUB2 N SUBSTITUTED),4,6,DIMETHYLPYRIDINES. IN THE SAME WAY 2,
PIPERIDINO,4,6,DIMETHYLPYRIDINE WAS PREPD.   FACILITY: LENINGRAD.
GOS. UNIV., LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC 533.15

SUYETIN, P. YE., and IVAKIN, B. A., Ural Polytechnic Institute imeni
S. M. Kirov

"Experimental Determination of Interdiffusion Coefficients in Gases"

Abstract: The article considers the question of the extent to which
diffusion coefficients obtained experimentally in the principal type
of diffusion device (two volumes of different gases joined by a cap-
illary) can be compared with theoretical Chapman-Enskog formulas ob-
tained in a coordinate system moving at mean mass velocity. A solu-
tion is obtained in the stationary case for the distribution of con-
centration, pressure, and mean mass velocity along the capillary, with
and without allowance for diffusion "slip." It is shown that, de-
spite the occurrence of mean mass motion, an analysis of the experi-
mental data can be made on the basis of the usual Fick law and the
measurement results can be compared with formulas for the interdiffu-
sion coefficient from strict Chapman-Enskog kinetic theory.

1/1

USSR   UDC   681.325.65:621.374.33

IVAKIN, B. F., ROYZEN, V. Z., ROZENTAL', N. K., Leningrad Production
Amalgamation "Krasnaya Zarya"

"A Logic Element"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
No 2, Jan 71, Author's Certificate No 290453, division H, filed 30 Jun 69,
published 22 Dec 70, p 161

Translation: This Author's Certificate introduces: 1. A logic element
which contains a symmetric magnetic system with control windings, and
a contact system. As a distinguishing feature of the patent, the logical
possibilities of the element are expanded by forming the magnetic system
from a horizontal bridge and six vertical rods with control windings in
sets of three on opposite sides of the horizontal bridge, a permanent
magnet set in the middle of the horizontal bridge between the above-mentioned
rods, and a double-arm rotating armature fastened over the permanent magnet
in such a way that one of the arms touches the end faces of the right or
left rods. 2. A modification of this element distinguished by the fact
that control of the element is simplified by making the control windings
with two sections, one section being on the upper half of one rod, while
the other section is on the lower half of another rod.

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                              - 13 -

Miscellaneous

USSR

IVAKIN, V., Department Head, All-Union Scientific Research Institute of Abrasives and Grinding, Leningrad

"Stronger Than Diamonds"

Sovetskaya Litva, 23 Jul 70, p 3

Abstract: A new superhard material called "el'bor" has been introduced. The application of el'bor in industry will open up wide prospects in the grinding of difficult-to-work steels and alloys which are used in the manufacture of many machine parts. El'bor possesses the hardness and abrasive properties of diamonds, but has significantly higher heat resistance. In addition, it is neutral to iron. These and many other properties make it possible to increase accuracy and the quality of the surface finish in processing parts and to raise labor productivity. El'bor, which was introduced by the "Il'ich" Abrasive Plant in Leningrad, is being used successfully in many enterprises in the Soviet Union.

1/1

USSR   UDC 620.17:669-1-13:669.15′74-194

CHERNYAK, S. S., IVAKIN, V. L., and MARMONTOV, Ye. A., Irkutsk Heavy
Machine Building Plant

"Properties of 110G13L Steel After Hot Deformation"

Abstract: A study was made of the influence of hot deformation on the
mechanical properties of type 110G13L low-phosphorus steel, with the
following composition: 1.2% C, 10.5% Mn, 0.37% Si, 0.01% S, 0.012% P,
produced in a 3 ton basic electric furnace. Specimens were heated from
900 to 1250°C at intervals of 50°C, held for 20-30 minutes, clamped in a
press at 0.06 m/min to from 5 to 50% deformation, with subsequent cooling
in water. Thirty percent deformation at 1200°C was found to increase
strength by 43%, and the yield point by 30% in comparison with the same
steel after standard hardening. The plastic properties changed little.
The wear of 110G13L steel containing 0.02% P after 30% hot deformation is
one-third the wear of type G13L steel containing 0.07% P after standard
hardening.
1/1

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USSR

UDC 614.1:312.1/.9

BEDNYY, M. S., Candidate of Medical Sciences and IVAKINA, V. N. Head of the Department of Medical Statistics, Ministry of Health RSFSR

"The 1970 Census, the Most Important Source of Information for Attacking Social and Hygienic Problems in Public Health"

Moscow, Zdravookhraneniye Rossiyskoy Federatsii, No 1, 1970, pp 8-15

Abstract: The slow, steady decline in the birth rate, especially in the RSFSR, Ukraine, Belorussia, Latvia, Estonia, and elsewhere, is a cause of concern. The 1970 census will provide the detailed information needed to frame a suitable demographic policy to meet the challenge. The general mortality rate as well as the average life expectancy have been on a plateau for the last few years. The Soviet population is clearly aging and the process is expected to continue for several decades. The 1970 census will throw light on the degree of aging of the population in the individual republics, oblasts, cities and rural areas, and among the various occupational and social groups, and thus help planners to reorganize medical and social services to meet actual needs. Analysis of the census findings and execution of policies based on them will strengthen the health of the Soviet people and increase their lifespan.

1/1

USSR

IVANAUSK.S, A.V.

"Temper... Drift Of Semiconductor Circuit For Amplification Of Ph... ... ...
Photodic...."

V sb. Tel an. ...ernetika (Cybernetics Technology--Collection Of Works), ...470,
pp 2... ... RZh--Elektronika i yey... primenenije, No 8, August 19... A... ...ract
No 8422).

Translation: The temperature drift is considered for a circuit with ... nc ...iode,
connected to the input of an emitter follower without a separating c... ...it... ... an
analysis of the circuit is conducted, taking into account the temper...ure ...pend...nce
of the amplification factor of the transistor, the reverse current of the collector,
the voltage of the emitter-base junction, and the photocurrent of the diode. The
method of computation presented is applicable to both germanium and silicon devices.
Summary.

1/1

AA0040763   *IVANCHENKO   A.I.*
UR 0482   /—/0

· Soviet Inventions Illustrated, Section I Chemical, Derwent,

240992   AUTOMATIC ASSEMBLY LINE for the manufacture
of sets of removable protecting ring compri-
ses a four-position carousel type stand with
standards which interact with the based trans-
porter going round the stand. There are also
mechanisms for cutting the band, guide and
pressing rollers and a photoelectric detector
sending signals to line control arrangements. The
line is also provided with cord laying and
cutting devices, individual ring manipulators and
vulcanising arrangements.

Ukrainskiy Nauchno – Issledovatel'skiy i Konstruktorskiy
Institut po Razrabotke Mashin i Oborudovaniya dlya Pererabotki
Plastmass, Iskusstvennoy Kozhi i Tekhnicheskoy Reziny

19750456

AA0040763

13.12.62. as 808119/23-26, Add to 178,974;
184,421; 228,363. IVANCHENKO, A.I. and
SERBALYUK, K.S. Plastics, Synthetic Leather and
Technical Resins' Processing Plant and Machinery.
Ukrainian Res. and Design Inst. (12.8.69) Bul.
13/1.4.69. Class 39a,^{6} Int. Cl. B 29h./

19750457

$\frac{2}{2}$
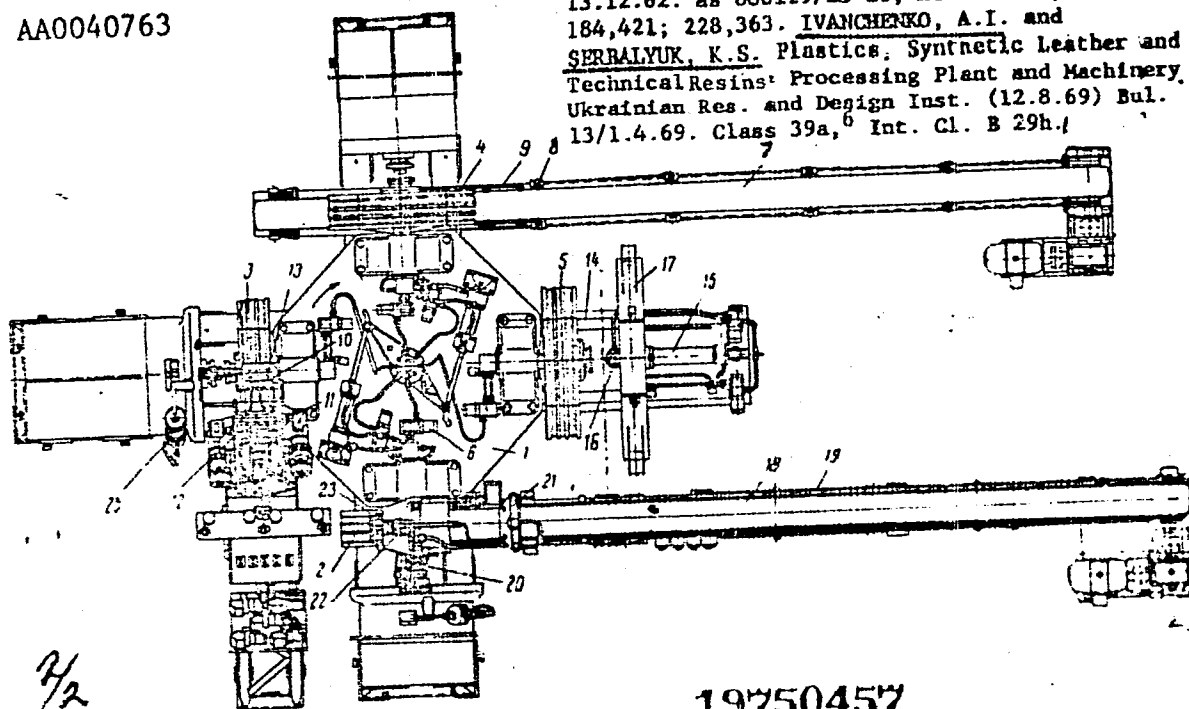
UDC 621.771.22.001.5

USSR

BREZHNEV, Ya. I., IVANCHENKO, F. K., and TYLKIN, M. A.

"An Investigation of the 550 Reduction Stand of the Light-Section Mill"

Moscow, Plasticheskaya Deformatisiya Metallov i Splavov, "Metallurgiya"
Publishing House, No. 64, 1970, pp 113-116

Translation: A comprehensive study was made of the 550 reduction stand of
the light-section mill.
    The amount of metal pressure on the rolls in different passes was deter-
mined, and on this basis checking calculations were made of the durability of
the primary stand assemblies. Two illustrations and one table.

1/1

TITLE--HYSTERESIS EFECTS DURING RETURNING OF THE OSCILLATION MODES OF A
   GUNN OSCILLATOR -U-

AUTHOR-(02)-IVANCHENKO, I.A., TSVIRKO, YU.A.

CCUNTRY OF INFO--USSR

SOURCE--RADIOTEKHNIKA I ELEKTRONIKA, VCL. 15, JUNE 1970, P. 1320-1322

DATE PUBLISHED----JUN70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRIC HYSTERESIS, GUNN DIODE, GALLIUM ARSENIDE
   SEMICONDUCTOR, ELECTRONIC OSCILLATOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0300   STEP NO--UR/0109/70/015/000/1320/1322

CIRC ACCESSION NO--AP0154104
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0154104

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   INVESTIGATION OF HYSTERESIS
   EFFECTS DURING RETUNING OF A GUNN OSCILLATOR CONSISTING OF AN N TYPE
   GAAS CRYSTAL CONNECTED IN SERIES WITH A BIAS SOURCE AND IN PARALLEL WITH
   AN LCR CIRCUIT.   ATTENTION IS GIVEN TO THE RANGE OF EXISTENCE OF THE
   OSCILLATION MODE WITH DOMAIN DAMPING BY A LOW FIELD.   CURVES SHOW
   HYSTERESIS EFFECTS IN THE FREQUENCY RESPONSE DURING BIAS VOLTAGE
   VARIATIONS AND CHANGES IN THE NATURAL FREQUENCY OF THE EXTERNAL CIRCUIT.

UNCLASSIFIED

1/2   024   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--USE OF A MATHEMATICAL STATISTICAL METHOD TO CALCULATE THE CROSS
    SECTION OF THE PRIME16 O(GAMMA, N) PRIME15 O REACTION -U-
AUTHOR-(02)-IVANCHENKO, V.G., RATNER, B.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(1), 175-8

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--STATISTIC ANALYSIS, EXCITATION CROSS SECTION, CALCULATION,
    PHOTONUCLEAR REACTION, OXYGEN ISOTOPE, RESONANCE ABSORPTION, PARTICLE
    ANNIHILATION, PHOTONEUTRON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0210   STEP NO--UR/0048/70/034/001/0175/0178

CIRC ACCESSION NO--AP0105286
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0105286
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INTENSITY OF ANNIHILATION PEAK
   WAS MEASURED VS. E SUBGAMMA IN THE RANGE 16.0-22.0 ME   THIS HAS AN
   EXCITATION CURVE WHICH STEP BY STEP WAS TRANSFORMED TO A CROSS SECTION
   CURVE BY USING THE X PRIME2 TEST. SIX RESONANCES AT 16.2, 17.21, 18.44,
   19.53, 20.75, AND 21.72 MEV ARE FOUND; THIS IS IN A GOOD AGREEMENT WITH
   PREVIOUS PAPERS.   FACILITY: FIZ. INST. IM. LEBEDEVA, MOSCOW,
   USSR.

USSR

UDC 614.35:615.285.7

SUPIN, G. S., and IVANCHENKO, V. V., Candidate of Chemical Science, All-Union Scientific Research Institute of Chemical Means of Plant Protection, Moscow, and the Saratov Scientific Research Institute of Agrarian Hygiene

"The Use of Polarography in Determining Residual Amounts of Organophosphorus Pesticides"

Moscow, Gigiyena i Sanitariya, No 3, Mar 71, pp 76-79

Abstract: A study of the application of the classic polarographic method and its modifications to determine residual amounts of organophosphorus pesticides showed the method to be very sensitive in all cases reviewed. The authors conclude that the various polarographic methods can be used to work out a reliable system for determining traces of any organophosphorus pesticides.

1/1

1/2   008   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--ON NEOTECTONICS OF OLD STRUCTURES IN BLOCKS IN THE MOGILYOV
   DNIESTER AREA -U-
AUTHOR-(02)-VELIKANOV, V.A., IVANCHENKO, V.YA.

COUNTRY OF INFO--USSR

SOURCE--DOPOVIDI AKADEMIY NAUK UKRAYNS'KOY RSR, SERIYA B, GEOLOGIYA,
   GEOFIZIKA, KHIMIYA TA BIOLOGIYA, 1970, NR 1, PP 3-6
DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--TECTONICS, GEOLOGY, GEOLOGIC MAPPING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1548   STEP NO--UR/0442/70/000/001/0003/0006

CIRC ACCESSION NO--AT0130460
                            UNCLASSIFIED

CIRC ACCESSION NO--AT0130460
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS A RESULT OF STUDYING THE
    MOGILYOV DNIESTER AREA NEOTECTONICS, ON THE BASIS OF A COMPLEX USE OF
    MAPPING BORING MATERIALS, RESULTS OF AEROPHOTOMATERIAL DECIPHERING AND
    RIVER LONGITUDINAL PROFILE ANALYSIS, A WIDE MANIFESTATION IS ESTABLISHED
    OF MODERN DIFFERENTIATED MOVEMENTS OF BLOCKS.   THE NEOTECTONIC
    STRUCTURES REFLECT A BLOCK CHARACTER OF THE LOWER STRUCTURAL STAGE
    TECTONICS AND IN MOST CASES THEY WILL INHERIT PLAN CONTOURS AND MOVEMENT
    MARK OF THE OLD STRUCTURES.   THE USED PROCEDURE MAY BY SUCCESSFULLY
    APPLIED FOR FINDING ABYSSAL TECTONIC STRUCTURES UNDER THE DNIESTER AREA
    CONDITIONS.   FACILITY: TREST KIYVGEOLOGIYA.

UNCLASSIFIED

Foundry

UDC 669.187.25

USSR

KOCHO, V. S., IVANCHENKO, Yu. I., KOROBKO, I. M., SHEKHOVTSOV, O. A., MALIKOV, G. P., and ANTIPENKO, G. I., Kiev Polytechnical Institute; Zaporozhye Electro-Metallurgical Works (Dneprospetsstal')

"Determination of the Instant of the End of the Power Melting Period in a Steel-Melting Arc Furnace"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Chernaya Metallurgiya, No 11, 1970, pp 70-72

Abstract: The possibility of determining the instant at which the steel melting period ends is discussed. A computation method is presented which is based on solution of a derived function from experimental data on melting ball-bearing steel in an arc furnace of the Dneprospetsstal' plant. A schematic of the computer is included.

1/1

1

USSR   UDC 537.312.62

GALKIN, A. A., Academician of the Academy of Sciences UkrSSR, BORODAY, B. I.
Zil'BERMAN, L. A., IVANCHENKO, YU. M., SVISTUNOV, V. M., Donets Physicotechnical Institute of the Academy of Sciences UkrSSR

"Role of Low-Frequency Fluctuations in the Josephson Effect"

Abstract: The role of low-frequency fluctuations which lead to variations in the Josephson current as a function of anomalous current-voltage characteristics and magnetism is discussed. It is noted that for super conducting tunnel systems it is possible to establish phase coherence throught the barrier to ensure tunneling of paired electrons. The presence of fluctuations comparable with the binding energy of the barrier can considerably effect the behavior of Josephson contacts, and many theoretical and experimental studies have been devoted to the effect of thermal fluctuations on the characteristics of superconducting tunneling. Tunnel contacts of the type Sn-I-Sn with specific resistance 0.01-0.02 ohm·mm^2, a high ratio I_{exp}/I_{theor}

~87-92%, and with a dependence of the critical current on the magnetic field close to $\sin \pi H/H_0 / \pi H/H_0$ were studied. For all samples the
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USSR

transition width did not exceed twice the Josephson penetration depth
$(\omega \sim 2\lambda_j)$. Since fluctuation frequencies were considerably less
than the characteristic frequencies of the system, the capacitance C and the
inductance L of the tunneling and the external loop could be neglected in
order to simplify the calculations. A graph of the effect of low-frequency
fluctuations on the variation of Josephson current with magnetism and the
initial segments of the current-voltage characteristics for different noise
voltages shows that the presence of noise voltages leads to the rise of a
resistance state. The experiment showed that noise voltages result in the
envelop of oscillations of the superconducting tunnel current in magnetic
fields dropping more rapidly than 1/H and ultimately in the oscillations
completely disappearing in strong noises. This is said to demonstrate the
significance of low-frequency noises in superconducting tunneling.

2/2

USSR

ZIL'BERMAN, L. A.; IVANCHENKO, Yu. M. (Donetsk Physics-Engineering Institute, Ukrainian Academy of Sciences)

"[Electrical] Current State of Metals with Nonmagnetic Impurities"

Leningrad, Fizika Tverdogo Tela; May, 1972; pp 1355-60

ABSTRACT: The effect of oscillating degrees of freedom of impurity atoms on the shape of the nonlinear volt-ampere characteristic of simple metals was studied. It was shown that with low temperatures with respect to nonlinearities of the volt-ampere characteristic and its derivatives it is possible to recover a spectrum of quasilocal oscillations. Inasmuch as it is possible experimentally to generate only relatively small current densities in metals, the entire study was carried out for heavy impurities ($M_i > M$), where M_i is the mass of the impurity ions and M is the mass of the metal ions, when the frequency of the quasilocal level is significantly less than the Debye frequency and small drift velocities of the electrons are sufficient for the observation of the effect.
1/1

FLUCTUATIONS IN JOSEPHSON CONTACT

Ivanchenko, Yu. M.; Zil'berman, L. A.

The behavior of a superconducting tunnel contact in the presence of thermal fluc-
tuations is investigated. In contrast to the case considered in ref [1] the transverse di-
mensions of the transition are not considered small. One must therefore assume that
the fluctuations introduced from the external circuit and arising within the contact act
differently and in the general case cannot be taken into account by introducing some
effective temperature. The dependences of the stationary current component on the mag-
netic field and the Josephson radiation spectra are calculated. The dependences may
strongly differ from those previously known [1-3]. It is possible that some of the results
obtained have been observed experimentally [4, 12, 14].

1/2   032   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--SCINTILLATION DEFEKTOSCOPE PROVIDING A SHADOW CONTRAST IMAGE ON A
  CRT SCREEN -U-
AUTHOR-(03)-POKROVSKIY, A.V., BUTAKOVA, G.YE, IVANCHENKO, YU.P.

COUNTRY OF INFO--USSR

SOURCE--SVERDLOVSK, DEFEKTOSKOPIYA, NO. 1, 1970, PP 130-132

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., METHODS AND EQUIPMENT

TOPIC TAGS--NONDESTRUCTIVE TEST, COBALT, ISOTOPE, CATHODE RAY TUBE,
  PHYSICS LABORATORY INSTRUMENT, STEEL/(U)FEU6 PHOTOELECTRIC MULTIPLIER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/0124   STEP NO--UR/0381/70/000/001/0130/0132

CIRC ACCESSION NO--AP0100660
                      UNCLASSIFIED

CIRC ACCESSION NO--AP0100660

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS ASSERT THAT INDUSTRY
  HAS RECENTLY BEEN MAKING INTENSIVE USE OF DEFECTOSCOPES WITH
  SCINTILLATION RADIATION SENSORS WHICH CAN PROVIDE A SENSITIVITY FOR
  STEEL OF UP TO 0.2 TO 0.5PERCENT UNDER IRRADIATION BY THE CO-60 ISOTOPE.
   HOWEVER, WITH SUCH EQUIPMENT IT IS DIFFICULT TO INTERPRET THE CONTROL
  RESULT AND RECOGNIZE THE NATURE OF THE DEFECT. CONSEQUENTLY, THIS
  METHOD SUFFERS IN COMPARISON WITH THAT OF RADIOGRAPHY. ATEMPTS HAVE
  BEEN MADE TO CORRECT THIS DEFECT, BUT HAVE FAILED TO GIVE THE SAME HIGH
  SENSITIVITY DUE TO POOR INDICATOR EQUIPMENT. THIS PAPER GIVES THE FIRST
  RESULTS OBTAINED IN TESTS OF A DEFECTOSCOPE CONTAINING A SCANNED
  RADIATION SENSOR AND A CATHODE RAY TUBE AS INDICATOR.   THE RESULTS SHOW
  THAT THE SYSTEM TESTED IS A SUPERIOR INSTRUMENT WITH BETTER SENSITIVITY
  AND RESOLUTION THAN THE OTHERS. A BLOCK DIAGRAM OF THE EXPERIMENTAL
  EQUIPMENT IS GIVEN, IN WHICH THE RADIATION SOURCE IS CS 137, AND THE
  DETECTOR IS A CRYSTAL MEASURING 20 BY 30 MM AND A PHOTOELECTRIC
  MULTIPLIER FEU-16.

IVANENKO, YU. V.

PHYSIOLOGY OF THE SONAR SYSTEM IN BLACK SEA DOLPHINS

[Article by E. Sh. Ayrapet'yants, V. A. Voronov, Yu. V. Ivanenko, M. P. Ivanov, D. L. Ordovskiy, B. F. Sergeyev, and V. I. Chilingiris; Leningrad, Zhurnal Evolyutsionnoy Biokhimii i Fiziologii, Russian, No 4, 1973, submitted 31 January 1973, pp 416-422]

Black Sea dolphins (*Tursiops truncatus* and *Phocaena phocaena*) were found to be capable of detecting metal spheres 5 to 150 mm in diameter and cylinders of the same diameter and height from a distance of over 24 m. The spheres and cylinders could be differentiated from 17.0 and 18.5 m, respectively. The dolphin's echo-locator adapted in the course of location, i.e., the locating signals adjusted to the parameters of the objects located. The directivity of emission varied widely. The directivity pattern was scanned with no change in the position of the animal's head. The directivity pattern of reception in the horizontal and vertical planes narrowed with increasing frequency and decreasing duration of the signal. When the reception pattern is scanned by turning the head, there evidently takes place a spatial-frequency filtering that ensures the directed and coordinated reception of the echosignal.

Introduction

The nature of the propagation of sound waves in water creates favor-able conditions for the use of echolocation by aquatic organisms. Echo-location has reached the highest peak of development in dolphins [1-7] whose enormous and rather highly developed brain enables them to control locating sound pulses and to make a complex analysis of echosignals. Accordingly, knowledge of the physiology of the dolphin sonar system is of value not only from the general biological standpoint but also for bionics problems.

- 1 -

[I - USSR - C]

1/2   016   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--DIPEROXIDES WITH VARYING THERMAL STABILITY OF PEROXIDE GROUPS AS
  INITIATORS OF RADICAL POLYMERIZATION AND BLOCK COPOLYMERIZATION -U-
AUTHOR--PRISYAZHNYUK, A.I., IVANCHEV, S.S.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN. SER. A 1970, 12(2), 450-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMAL STABILITY, ORGANIC PEROXIDE, POLYMERIZATION KINETICS,
  COPOLYMERIZATION, STYRENE, METHYL METHACRYLATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0244   STEP NO--UR/0459/70/012/002/0450/0459

CIRC ACCESSION NO--AP0106900
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0106900
ABSTRACT/EXTRACT--(U) GP-O-   ABSTRACT.   THE POLYMN. KINETICS OF STYRENE
   (I), ME METHACRYLATE (II), AND THE COPOLYMN. OF I WITH II WERE STUDIED
   USING PEROXIDES WITH 2 PEROXY GROUPS OF DIFFERENT THERMAL STABILITY OF
   GENERAL FORMULAS (SHOWN ON MICROFICHE), THE PREPN. OF WHICH WAS REPORTED
   (S.G. ERIGOVA, ET AL., 1968).   THE KINETIC CURVES HAVE AN INFLECTION
   CORRESPONDING TO THE START OF THE GREATER PARTICIPATION OF THE MORE
   STABLE PEROXY GROUPS.   THE INITIATION RATES, ACTIVATION ENERGIES, CHAIN
   TRANSFER RATE CONSTS., AND THE THERMAL DECOMPN. RATE CONSTS. OF III AND
   IV WERE DETD. THE ANAL. OF THE KINETIC DATA, MONOMER CONVERSION RATES,
   AND POLYMER POLYDISPERSITY SHOWED THAT IN THE 1ST POLYMN. STAGE
   OLIGOMERS ARE FORMED CONTG. PEROXY END GROUPS.   A 2 STAGE PROCESS IS
   PROPOSED FOR THE PRODUCTION OF BLOCK COPOLYMERS WHICH REQUIRES 2 TEMP.
   LEVELS AND THE USE OF III OR IV.

UNCLASSIFIED

TITLE--INITIATION OF RADICAL POLYMERIZATION IN EMULSIONS -U-

AUTHOR-(04)-IVANCHEV, S.S., SOLOMKO, N.I., KONOVALENKO, V.V., YURZENKO,
V.A.

CCUNTRY OF INFC--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(3), 593-5

DATE PUBLISHED-------7C

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--RADICAL POLYMERIZATION, POLYMERIZATION KINETICS, STYRENE,
PEROXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0223   STEP NO--UR/0020/70/191/003/0593/0595

CIRC ACCESSION NO--AT0132495

UNCLASSIFIED

CIRC ACCESSICN NO--AT0132495
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE EMULSION POLYMN. KINETICS OF
STYRENE IN THE PRESENCE OF VARIOUS INITIAORS SUGGESTED THAT COMPDS.
HAVING AN OPTIMUM RATIO BETWEEN THE POLAR (PEROXIDE) AND NONPOLAR
MOIETIES IN THE MOL. WERE THE MOST EFFECTIVE INITIATORS. THESE
INITIATOR MOLS. WERE ORIENTED IN SUCH A WAY THAT THE PEROXIDE BONDS
ENETERED THE SPHERE OF INFLUENCE OF THE SURFACE FORCES WHICH FACILITATED
ITS CLEAVAGE.   FACILITY: ODESS. GOS. UNIV. IM. MECHNIKOVA,
ODESSA, USSR.

UNCLASSIFIED

TITLE--FIELD EFFECT AT A SEMICONDUCTOR C DOMAIN FERROELECTRIC CONTACT -U-

AUTHOR-(03)-VUL, B.M., GURO, G.M., IVANCHIK, I.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(1), 162-6

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--FIELD EFFECT, FERROELECTRIC MATERIAL, FORBIDDEN ZONE WIDTH, SEMICONDUCTOR PROPERTY, FREE ELECTRON, ELECTROMAGNETIC INDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/1991   STEP NO--UR/0449/70/004/001/0162/0166

CIRC ACCESSION NO--AP0105065
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0105065
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONTACT BETWEEN A
  SEMICONDUCTOR AND A C DOMAIN FERROELEC. WAS EXAMD. THEORETICALLY.   IF
  THE FORBIDDEN BAND WIDTH OF THE SEMICONDUCTOR IS SMALLER THAN THE
  CORRESPONDING VALUE OF THE FERROELEC., A LAYER OF FREE CARRIERS IS BUILT
  UP IN THE ADJACENT REGION OF THE SEMICONDUCTOR, REFLECTING THE FIELD OF
  SPONTANEOUS INDUCTION (D SUB0) OF THE FERROELEC. SOME FERROELECS. (E.G.
  BATIO SUB3 AND PBTIO SUB3 WOTH D SUB0 IS SIMILAR OR EQUAL TO 10 PRIME8
  V-CM) SHOW A CONCN. OF FREE CARRIERS IN THIS LAYER OF APPROX. 10
  PRIME21-CM PRIME3; THE FREE CARRIER GAS EXHIBITS A DISTORTION OF 1-2 EV.
   IF THE FORBIDDEN BAND THE FERROELEC., THE SEMICONDUCTOR REMAINING
  UNDISTURBED.   FACILITY: FIZ. INST. IM. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

1/2   024   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--DEPENDENCE OF THE VOLTAGE CURRENT CHARACTERISTICS OF A TUNNEL DIODE
   ON THE FERMI LEVELS IN N AND P REGIONS -U-
AUTHOR-(03)-VUL, B.M., ZAVARITSKAYA, E.I., IVANCHIK, I.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 329-36

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--VOLT AMPERE CHARACTERISTIC, TUNNEL DIODE, FERMI LEVEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0500   STEP NO--UR/0449/70/004/002/0329/0336

CIRC ACCESSION NO--AP0121174
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0121174
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE E-I CHARACTERISTICS OF A
  TUNNEL DIODE WERE CALCD. IN THE INTERVAL 4 IS SMALLER THAN T IS SMALLER
  THAN 400DEGREES K (B. M. VUL, ET AL., (1969) FOR THE CASE WHEN THE
  POSITION OF FERMI LEVEL (F SUBN) OF ELECTRONS IN THE N REGION CHANGES
  SHARPLY WITH TEMP. WHILE THE POSITION FO THE FERMI LEVEL (F SUBP) OF
  HOLES IN THE P REGION CHANGES ONLY SLIGHTLY. IN THE TEMP. INTERVAL
  INDICATED AND OVER A WIDE REGION OF VALUES OF F SUBN AND F SUBP, THE
  FORM OF THE E-I CURVES CHANGES ONLY SLIGHTLY. FROM CALCD. DATA THE
  TEMP. DEPENDENCE OF THE RATIO V SUBP-V SUBV WAS ESTABLISHED, WHERE V
  SUBP IS THE POTENTIAL DIFFERENCE FOR WHICH TUNNEL CURRENT BECOMES MAX.
  AND V SUBV EQUALS (F SUBN PLUS F SUBP)-Q TIMES V SUBP-V SUBV CHANGES
  VERY SLOWLY IN THE INTERVAL FROM 0.33 AT T IS LARGER THAN 250DEGREESK TO
  0.38 AT T IS SMALLER THAN 50DEGREESK. CALCNS. SHOW THAT AS DISTINCT
  FROM HIGHER TEMPS. AT LOWER TEMPS. THE FORM OF THE E-I CURVES DEPENDS
  NOT ONLY ON THE SUM BUT ALSO ON THE RATIO OF FERMI ENERGIES OF N AND P
  PARTS.   FACILITY: FIZ. INST. IM. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

IVANCHIN V. F.

AA0047096

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

244504 AUTOMATIC INDUCTANCE METER FOR TESTING PIEZO-
ELECTRIC RESONATORS contains master harmonic
generator (1), wide band amplifier (2) whose amplif-
ication factor is automatically changed by regulator
(3), four-terminal resistance network (4) to which
is connected piezoelectric resonator to be tested
(not shown), automatic frequency trim circuit con-
sisting of wide band amplifiers (5) and (6), sampling
phase inverter (7) and phase detector (8). Pulse
oscillator (9) changes the phase of sampling phase
inverter (7). One input of ratiometer (10) is
connected to input of resistance network (4) through
amplitude detector (11) and amplifier of harmonic
signal (12). The second input of ratiometer (10)
is connected to input of amplifier (12) through
converter circuit of connected in series peak
detector (13), impulse amplifier (14) and frequency
detector (15). The scale of ratiometer (10) is
suitably graduated for direct reading the dynamic
inductance of piezoelectric resonator.
12.6.68 as 1246963/26-9.V.F.IVANCHIN.et al(7.10.69)
Bul 18/28.5.69. Class 21e. Int.Cl.G 01r.

2/70

4

1/2

AA0047096

AUTHORS: Ivanchin, V. F.; Shkinderov, Ye. G.; Levtush, M. L.; Shemarina, L. I.;
           Dvoryantsev, N. V.
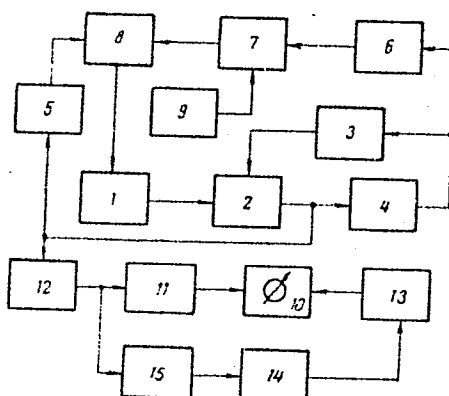
19790584

Instruments and Equipment

USSR

IVANCHIN-PISAREVA, YE., Acting Head, Division of Medicine, Medical Industry
and Sports Technology, Committee on Inventions and Discoveries Affairs at
the Council of Ministers USSR

"Author's Certificate of the Soviet Inventor: An Original Device"

Moscow, Meditsinskaya Gazeta, 17 Mar 72, p 2

Abstract: A. Lyalin, A. Matveyev, and P. Solov'yev, workers at the Leningrad
Scientific Research Institute of Prosthetics, have developed a unique device
that is to be used in prosthetics and prosthetic construction. By means of
this device, asymmetry in motor functions of human extremities in carrying
out various movements can be determined. The movement sensors in the new
device are made in the form of paired potentiometers affixed at the identical
joints of the left and right extremity. Balancing potentiometers form together
with the sensors two pairs of bridge circuits that are connected in series.
This makes it possible to obtain at the exit of the second bridge circuit
potentials that are proportional to the squares of angular displacements.
Subsequently these potentials are smoothed out by RC filters and fed into an
indicator arrangement which effects a   comparison of mean square values
of interlink angles for the two identical joints.
1/1

USSR

SHVAROV, I. K., IVANCHINOV -MARINSKIY, N. N., POPOV, V. A.

"A Method of Measuring the Density and Frequency of Electron Collisions of an Isotropic, Weakly Ionized Plasma"

Translation: A method is described for measuring the density and frequency of electron collisions of an isotropic, weakly ionized plasma. The attenuation constants of a counterclockwise polarized microwave are measured at two magnetic field strengths for a volume of plasma contained in the magnetic field created by a solenoid. The plasma parameters are determined from the known relationships of each of the two attenuation constants to the concentration and frequency of electron collisions for the given volume of plasma.

1/1

USSR   UDC: 621.372.822:621.317.023(088.8)

SHVAROV, I. K., IVANCHINOV-MARINSKIY, N. N., RYAZANOV, Yu. A.

"An Installation for Adiabatic Compression"

USSR Author's Certificate No 277889, filed 5 Jun 69, published 17 Nov 70
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A309 P)

Translation: This Author's Certificate introduces an installation for
adiabatic compression which contains a high-pressure tank and a tube. As
a distinguishing feature of the patent, the unit is designed to provide
matching of a microwave channel to the tube without disrupting its working
mode. A knife-like string is installed along the diameter of the tube,
ending on one side in a coaxial short-circuiting piston, and on the other
in a coaxial plug. In the tube between the high-pressure tank and the
knife-like string is an outside jumper which passes the working gas.

1/1

1/2   033

TITLE--INVENTION OF MEDICAL INSTRUMENTS -U-

UNCLASSIFIED

PROCESSING DATE--04DEC70

AUTHOR--IVANCHINPISAREVA, YE.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA GAZETA, SEPTEMBER 11, 1970, P 2, COL 8

DATE PUBLISHED--11SEP70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MEDICAL APPARATUS, CHOLESTEROL, EYE, PRESSURE, NEUROPHYSIOLOGY, BLOOD PRESSURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1767

STEP NO--UR/9034/70/000/000/0002/0002

CIRC ACCESSION NO--AN0138727

UNCLASSIFIED

CIRC ACCESSION NO--AN0138727   UNCLASSIFIED   PROCESSING DATE--04DEC70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. V. MELIKHOV, PHYSICIAN WITH THE
KISHENEV CLINIC, HAS DEVELOPED A NEW METHOD OF PREVENTING THE ANCYLOS OF
THE TEMPORAL MAXILLARY JOINT. THE KAUNAS MEDICAL INSTITUTE IMENI
STANKEVICH HAS DEVELOPED A NEW TECHNIQUE FOR DIRECT DETERMINATION OF
CHOLESTEROL WHICH REQUIRES MINIMUM AMOUNTS OF BLOOD SERUM. A BRIEF
ACCOUNT OF THE TECHNIQUE IS GIVEN. K. KRYLOV, S. MAYOROV, ET AL,
OPTICIANS OF THE LENINGRAD OF PRECISION MECHANICS AND OPTICS, HAVE
PROPOSED A MORE ADVANCED TECHNIQUE OF DETERMINING THE EYEBALL PRESSURE.
V. VOLKOV, AN ASSOCIATE OF THE INSTITUTE OF HIGHER NERVOUS ACTIVITY AND
NAUROPHYSIOLOGY OF THE ACADEMY OF SCIENCES, U.S.S.R., PROPOSED AN
ORIGINAL DEVICE WHICH ISOLATES THE NEEDED FREQUENCY BAND IN THE
ELECTROENCEPHALOGRAM RANGE. PHYSICIAN V. GRISHCHENKO OF THE
NOVOKUZNETSK INSTITUTE FOR ADVANCED TRAINING OF PHYSICIANS HAS DEVELOPED
A NEW SIMPLE TECHNIQUE OF DETERMINING BLOOD PRESSURE. A BRIEF
DESCRIPTION OF THE TECHNIQUE IS GIVEN.   FACILITY: DEPARTMENT OF
MEDICINE, MEDICAL INDUSTRY, AND ATHELETIC EQUIPMENT OF THE COMMITTEE OF
INVENTIONS AND DISCOVERIES, U.S.S.R.

UNCLASSIFIED

1/2   007   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--SOLUTION OF INTERPOLATION PROBLEMS IN TECHNICAL CYBERNETICS BY
  MEANS OF THE METHOD OF THE GROUPWISE ARGUMENT CALCULATION -U-.
AUTHOR--IVACHNENKO, A.G.

COUNTRY OF INFO--USSR

SOURCE--MESSEN, STEUERN, REGELN, 1970, VOL 13, NR 4, PP 134-138

DATE PUBLISHED--------70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--STOCHASTIC PROCESS, ENGINEERING CYBERNETICS, INTERPOLATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1983/1915   STEP NO--GE/0035/70/013/004/0134/0138

CIRC ACCESSION NO--AP0054716
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0054716
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE FIRST PART OF THIS PAPER
   THE AUTHOR CONSIDERS THE IDENTIFICATION PROBLEM OF STATIC
   CHARACTERISTICS WITH MULTIPLE EXTREMES, THE PREDICTION AND THE PATTERN
   RECOGNITION PROBLEM OF A STOCHASTIC PROCESS BEING REDUCED TO THE
   IDENTIFICATION PROBLEM OF A COMPLICATED HYPERPLANE. THE METHOD OF THE
   GROUPWISE ARGUMENT CALCULATION FOR SOLVING INTERPOLATION PROBLEMS
   EXPLAINED BY MEANS OF EXAMPLES.

UNCLASSIFIED

USSR

UDC 616.33 - 002.44 - 085.837.3-036.8

IVANCHO, P. S., Irshavskaya Regional Hospital, Zakarpatskaya Oblast

"The Immediate and Remote Results of the Ultrasound Treatment of Patients With Peptic Ulcers"

Moscow, Voprosy Kurortologii, Fizioterapii i Lechebnoy Fizicheskoy Kul'tury, No 3, May/Jun 70, pp 266-268

Abstract: Low intensity ultrasonic oscillations have an advantageous effect on basic clinical manifestations of peptic ulcers, both subjective and objective. After 5-6 treatments, the symptoms disappeared. The combination of ultrasound and medications was most effective. Ultrasound treatment may be used even in the presence of latent bleeding. This method of treatment is highly recommended.

1/1

USSR

UDC 612.314.58(088.8)

IVANCHUK, B. N., KOLOSKOV, I. I., and RUVINOV, B. Ya.

"D-C Voltage Regulation"

Translation: A voltage regulator contains a principal thyristor and a linear reactor with a tap, connected in series with the power supply into the load circuit. A commutating capacitor is connected between the midpoint of the linear reactor and the other terminal of the power supply. A capacitor is shunted by a semiconductor diode connected opposite to the effective polarity. It is proposed to connect an auxiliary thyristor parallel to the load, during operation of which the load circuit is short circuited and during which the capacitor discharge current flowing across the linear reactor produces a voltage locking the principal thyristor. 1 ill. A.S.

1/1

USSR

UDC: 681.325.3

IVANDIKOV, V. V., KRYLOV, S. N., SHAFRANSKIY, L. V.

"Analog Voltage-to-Digital Converter"

USSR Author's Certificate No 251263, Filed 20 Dec 67, Published 4 Feb 70
(from RZh-Avtomatika, Telemekhanika i vychislitelnaya tekhnika, No 9, Sep
70, Abstract No 9B556P)

Translation: An analog voltage-to-digital converter contains null mechanisms
the inputs of which are connected to a converted signal source and to a stan-
dard voltage divider. It also contains a code converter. The analog-to-
digital converter differs from the known ones by the fact that in order to
increase speed and accuracy of conversion, in each bit except the high-order
bit the outputs of the null mechanisms are connected via a logical "negation
of equivalence" circuit to the corresponding inputs of the code converter.
The output of the null mechanism of the high-order bit is connected to the
input of the code converter directly, and the outputs of the code converter,
except the outputs of the low-order bits, are connected to the standard vol-
tage divider. There is one illustration.

1/1

Optical

USSR

UDC: 528.52

IVANDIKOV, Ya. M., Docent, Candidate of Technical Sciences, CHUDINOV, K. A., Senior Instructor, Moscow Institute of Engineers of Geodesy, Aerial Photography and Cartography

"An Optical Coordinator With Mirror Cone"

Moscow, Izvestiya VUZov: Geodeziya i Aerofotos"yemka, No 2, 1972, pp 127-132

Abstract: The paper discusses the possibilities for developing wide-angle angle-measurement systems in which one of the main elements of the optical coordinator is a reflecting cone or a toroidal annular mirror. Systems of this type may be useful in developing instruments for spacecraft orientation. Geometric methods of image construction are presented which permit first-approximation judgment of image quality and energy distribution when a mirror cone is used as an optical coordinator element.

1/1

USSR

UDC 621.791.753.042.4;669.018.45;539.434

LOZITSKIY, L. P., Doctor of Technical Sciences, BEREZLEV, V. F., Engineer,
IVANENKO, A. A., Candidate of Technical Sciences, KOROLEVA, Z. G., Candidate
of Technical Sciences, MUSIYENKO, B. I., Engineer, and MOLOCHKOV, M. A.,
Candidate of Technical Sciences, Kiev Institute of Civil Aviation Engineers

"Thermal Fatigue Resistance of Welded Joints of EP99 Alloy Performed with
Electrodes of Different Marks" (Reported at the All-Union Conference "Estimate
of the Supporting Power of Materials and Welded Joints According to Breakdown
Mechanics," Kiev, Dec 72)

Abstract: An experimental study was made of the effects of heating tempera-
ture and thermal cycling on the depth of thermal fatigue cracks and the mech-
anical properties of welded joints of EP99 alloy welded with NIAT-8 and NIAT-7
electrodes. The parameters characterizing the injuriousness of the specimens
in the process of thermal fatigue tests are the depth of cracks, their growing
rate, and changes in residual strength, plasticity, and structure. The
results are discussed by reference to diagrams showing the depth of crack
dependence on maximum cycling temperature and on the quantity of thermal
1/2

USSR

LOZITSKIY, I. P., et al., Avtomatcicheskaya Svarka, No 1(250), Jan 74,
pp 39-42

cycling and the residual strength and relative narrowing dependences on the
maximum temperature after 2000 heat cycles. Specimens welded with NIAT-8
electrodes possessed higher thermal fatigue strength in comparison with
specimens welded with NIAT-7 electrodes. The increased Cr content (up to 21%)
of the joint welded with the NIAT-7 electrode resulted in decreased thermal
fatigue strength of the welded specimen. Four figures, two tables, two biblio-
graphic references.

2/2

USSR

UDC 539.4

MOLOCHKOV, M. A., IVANENKO, A. A., VEGROV, A. N., SITNICHENKO, V. P., PULYAYEV-
SKIY, V. A., KOVESHNIKOV, N. A.

"The Effect of the Stress Concentrator on Fatigue Strength in Male Cone Joints
for Titanium Alloy Pipe"

Translation: By testing samples of 7M titanium alloy pipe 12 × 1.5 for fatigue,
it was demonstrated that stress concentration in the investigated joint is
higher than the theoretically calculated concentration. When testing with a
frequency of 200 hertz on a 10^7 cycle base, the effective concentration factor
was 3.2 with a fillet radius of 0.5 mm. The reduction in fatigue strength is
ascribed to significant residual strains reaching 15% in the diameter transition
zone.

1/1

USSR

GUZHAVIN, V. V., IVANENKO, I. P., MAKAROV, V. V.

"Effect of the Geomagnetic Field on the Angular Distribution of Particles in an Electromagnetic Cascade"

Abstract: The particles discussed in this paper are charged particles falling in a cascaded shower in the atmosphere and deflected by the earth's magnetic field. This deflection leads to the asymmetry of the shower's three-dimensional characteristics with respect to the axis of the shower. The paper derives the basic equations of the theory accounting for the effect of the earth's magnetic field on the particles, with an approximation of small angles of multiple dispersion, and computes the angular distribution function of the shower without taking the ionization losses into account. This latter computation is done by the method of moments.

1/1

USSR   UDC 62-52

KORDUN, N. N., IVANENKO, L. A.

"Method of Multipoint Automatic Regulation of Parameters of Objects With Delay"

USSR Author's Certificate No. 251051, Filed 26/05/66, Published 22/01/70
(Translated from Referativnvy Zhurnal Avtomatika, Telemekhanika i
Vychislitel'naya Tekhnika, No 12, 1970, Abstract No. 12 A266 P by V. D.)

Translation: Methods are known for multipoint automatic regulation of para-
meters of objects with rigid programed control by dynamically identical
objects with series connection to regulating devices. The method suggested
differs from known methods in that it is based on queueing theory and
allows the accuracy of regulation of parameters of objects with various
dynamic characteristics to be increased while reducing the number of
regulators required. The selection of requirements for servicing after one
of the regulators becomes free is performed in the order of arrival of
requests. The frequency of connection of devices to the regulating devices
is determined by the dynamic characteristics of the regulation objects, the

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USSR

UDC 62-52

KORDUN, N. N., IVANENKO, L. A., USSR Author's Certificate No. 251051, Filed 26/05/66, Published 22/01/70, (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 12, 1970, Abstract No. 12 A266 P by V. D.)

regulating device being busy in the regulation system only for the duration of the control action.

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Measuring, Testing, Calibrating

USSR   UDC (546.17+546.21):543.51

VITOL', E. N., ORLOVA, K. B., and IVANENKO, M. A.

"Background Registration of the Mass-Spectrometer and Reproducibility of the Determination of the Isotopic Composition of Nitrogen and Oxygen"

Moscow, Zavodskaya Laboratoriya, Vol 37, No 12, 1971, pp 1466 — 1469

Abstract: The background effect on results of the isotopic analysis of nitrogen, oxygen, and hydrogen by molecular ions of N_2, O_2, and H_2 which coincide with the most intensive background peaks was investigated with the mass-spectrometer MI-1305. The extrapolation of linear graphs in coordinates $k - 1/s$ (where: k=concentration of the heavy isotope calculated by disregarding the background and s=run of measured molecular ions on the axis of ordinates, $s \to \infty$) yields concentrations which are independent of the effect of the background. Concentrations which are close to extrapolation results are received by subtraction from peak values of the background at 1/2

USSR

VITOL', E. N., et al., Zavodskaya Laboratoriya, Vol 37, No 12, 1971, pp 1466-1469

of values of corresponding background peaks. The reproducibility of the isotope analysis is defined by scattering of the background and the reading error on the millivoltmeter scale. Such errors as the instability of the filling with gas and the working of the ion source and the ion current amplifier are unessential. Four illustr., three tables, four formulas, two biblio. refs.

2/2

TITLE--THERMAL DECOMPOSITION OF M-DIISOPROPYLBENZENE HYDROPEROXIDES -U-

AUTHOR-(02)-IVANENKO, P.F., KUCHER, R.V.

COUNTRY OF INFO--USSR

SOURCE--UKR. KHIM. ZH. 1970, 36(2), 178-80

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMAL DECOMPOSITION, ISOPROPYL BENZENE, HYDROPEROXIDE,
  PYROCATECHOL, NAPHTHOL, CHEMICAL REACTION MECHANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1967   STEP NO--UR/0073/70/036/002/0178/0180

CIRC ACCESSION NO--AP0123748
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0123748
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE ABSENCE OF ACID, NA SUB2 CO
SUB3 WAS PRESENT IN THE REACTION MIXT., M-C SUB6 H SUB4 (CME SUB2 OOH)
SUB2 DECOMPD. TO FORM 50-90PERCENT M-HOME SUB2 CC SUB6 H SUB4 CME SUB2
OOH.   THIS DECOMPN. TAKES PLACE BY SOME MOL. MECHANISM AND NOT VIA A
FREE RADICAL ONE SINCE IT IS UNAFFECTED BY THE PRESENCE OF P-C SUB6 H
SUB4 (OH) SUB2 OR NAPHTHOL.   FACILITY: DONETSK. OTD. INST. FIZ.
KHIM. IM. PISARZHEVSKOGO, DONETSK, USSR.

UNCLASSIFIED

UDC: 681.327.11

USSR

IVANENKO, S. D., KLEPIKOV, A. N., KHAYKIN, V. B.

"A Device for Recording Information on an Electrochemical Carrier"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 18, 1970, Author's Certificate No 271888, Filed 18 Dec 68, pp 107-108

Abstract: This Author's Certificate introduces a device for recording infor-
mation on an electrochemical carrier. The unit contains three groups of
electrodes, one of which is made in the form of a flat fixed electrode, while
another is made in the form of plates which are insulated from each other.
The device also contains a cartridge for the carrier, a receiving drum, and
a transport mechanism for the carrier. As a distinguishing feature of the
patent, the speed and reliability of the device are improved by fastening
the third group of electrodes to a movable table and making this electrode
group in the form of needle electrodes arranged in three rows, one of them
corresponding to the common flat electrode, and the other two corresponding
to the insulated plates and set at an angle to the direction in which the
carrier moves.

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USSR

IVANENKO, S. D., et al, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 18, 1970, Author's Certificate No 271888, Filed 18 Dec 68, pp 107-108
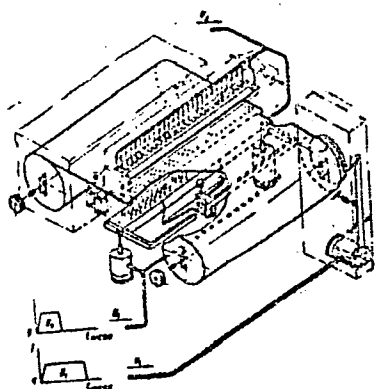
2/2

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USSR   UDC 535.317.1:535.345.3

IVANENKO, V. D., Candidate of Technical Sciences

"Selection of the Spatial Selection Zone During Observation With Illumination"

Leningrad, Optiko-Mekhanicheskaya Promyshlennost', No 12, December 1971, pp 3-4

Abstract: The article deals with the relationship of the limit observation range to the zone of spatial selection and the meteorological range of visibility with the employment of laser illumination. A plot of range limit versus spatial selection zone size shows that maximum visibility range is achieved when backscatter is eliminated from the first 100-500 meters. It is also shown that the spatial selection of interference in the near zone only affords the possibility of visibility ranges greater than the meteorological visibility range.

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USSR

IVANENKO, V. I., KOLESNIK, V. V., SHOR, Ye. I.

"Certain Methods of Determination of the Optimal Control for Probabilistic Dynamic Objects"

Upravlyayemyye Sluchayn. Protsessy i Sistemy [Controlled Random Processes and Systems -- Collection of Works], Kiev, 1973, pp 24-53 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V216, by R. Liptser).

Translation: Suppose z_k, $k = 1,\ldots,$ m is a sequence of random quantitites, u_k, $k = 1,\ldots,$ ℓ is a sequence of control actions generated by z_k, $k \geq 1$. Control z_k, $k \geq 1$, should be selected so as to minimize $M \sum\limits_{k=1}^{N} w(x_k, u_k)$, where $x_k =$ $= G(u_1,\ldots, u_e, z_1,\ldots, z_m)$, while w and $G(\cdot,\ldots,\cdot)$ are certain measurable functions.

In order to seek out the optimal control in this problem, one must solve the equation of Bellman. Since determination of the solution of Bellman's equation is difficult, conditions are formulated under which the optimal control in the kth step can be found by minimizing the conditional mathematical

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USSR

Ivanenko, V. I., Kolesnik, V. V., Shor, Ye. I., Upravlyayemyye Sluchayn.
Protsessy i Sistemy, Kiev, 1973, pp 24-53.

expectation $M[w(x_k, u_k)S_{k-1}, z_k, u_k]$ in the kth step, where S_{k-1} is a sigma
algebra generated by the quantities $(z_1, \ldots, z_{k-1}, u_1, \ldots, u_{k-1})$. Certain
other approaches simplifying the solution of Bellman's equation for this
control problem are also studied.

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USSR

IVANENKO, V. I., KOLESNIK, V. V., KORABTSOV, A. A.

"An Enterprise with Continuous Technology as an Object of Control"

Upravlyayushchiye Sistemy i Mashiny [Control Systems and Machines], 1972, No 1, pp 41-49 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V674, by the authors).

Translation: The problem of construction of an automated control system for an enterprise with continuous technology is studied from the standpoint of the priority of the main production process. Using decomposition resulting from the structure of the basic production complex, the authors establish the interrelationship between models, criteria and tasks performed at each level in the hierarchy of the ACS.

1/1

USSR

UDC   62-551.43:517.27

IVANENKO, V. I., SHELUDCHENKO, L. M., Institute of Cybernetics, Academy of Sciences of the UkrSSR

"An Optimizing Continuous-Action Controller"

USSR Author's Certificate No 324610, filed 25 Jun 70, published 29 Feb 72 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 9, Sep 72, Abstract No 9A180 P)

Translation: Existing optimizing controllers contain an amplifier, integrator, control object, and module for computing the increment in the controlled quantity all connected in series, the output of the integrator being connected to the input of a module for computing the increment in the controlling action. The disadvantages of these devices are their complexity, low speed, and low accuracy in the area of the extremum. The purpose of the invention is to simplify the controller and increase its speed and precision in the area of the extremum. This goal is achieved in the proposed device by adding an approximation module made in the form of two channels, each of which contains an inverter, a diode, and an electromagnetic relay all directly connected. Two fixed contacts of the relay

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USSR

IVANENKO, V. I., SHELUDCHENKO, L. M., USSR Author's Certificate No 324610

are connected to the input and output of the amplifier respectively, and the movable contact is connected to a potentiometer. The movable contact is tied to the input of an adder which is common to both channels. The inputs of the two amplifiers in the approximation module are connected respectively to the outputs of the module for computing the increment in the controlled quantity and the module for computing the increment in the controlling action. The input of the adder in the approximation module is connected to the input of the controller amplifier.

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1/2   035

UNCLASSIFIED

TITLE--INTENSITY OF SERINE, ASPARTATE, AND GLUTAMATE METABOLISM IN THE BRAIN AND LIVER DURING VARYING PERIODS OF EXPOSURE TO GLYCINE,2,

PROCESSING DATE--30OCT70

AUTHOR-(02)-KHODZHAIOVA, G.K., IVANENKO, YE.F.

COUNTRY OF INFO--USSR

SOURCE--VESTN. LENINGRAD. UNIV., BIOL. 1970, (1), 114-20

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--GLYCINE, CARBON ISOTOPE, RAT, CARBON DIOXIDE, RADIOACTIVE TRACER, BRAIN, LIVER, SERINE, GLUTAMATE, METABOLISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0242

STEP NO--UR/9074/70/000/001/0114/0120

CIRC ACCESSION NO--AP0120932

UNCLASSIFIED

CIRC ACCESSION NO--AP0120932   UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. GLYCINE PRIME14 C (30 MU CI-100 G) GIVEN S. C. TO RATS WAS RAPIDLY OXIDIZED TO CO SUB2. THE HIGHEST LEVEL OF RADIOACTIVE CO SUB2 WAS OBSD. 60 MIN AFTER THE INJECTION OF THE LABEL. LABELED GLYCINE WAS METABOLIZED IN BRAIN AND LIVER TISSUE TO SERINE, THEN TO ASPARTATE AND GLUTAMATE. THIS METABOLISM OCCURRED MUCH MORE RAPIDLY AND TO A GREATER EXTENT IN THE LIVER THAN IN THE BRAIN. IN EARLY PERIODS AFTER THE GLYCINE INJECTION, THE SP. ACTIVITIES OF ALL OF THE INVESTIGATED AMINO ACIDS IN THE LIVER WERE HIGHER THAN THOSE IN THE BRAIN, BUT THE LONGER THE PERIOD OF EXPOSURE, THE SMALLER WERE THE DIFFERENCES.

UNCLASSIFIED

Ivanenkov, V. N.   Oceanography - Photosyn. Layer

Rate of Chemical Processes in Tropical Atlantic Photosynthesis Layer

This paper gives a quantitative estimate of the rate of production
and biochemical consumption of oxygen, the rate of assimilation and regen-
eration of the principal biogenous elements in the photosynthesis layer,
and also the rate of the photosynthesis process in summer in the Atlantic
Ocean at 16.5°N at 32-33°W. This estimate is given on the basis of use of
data on the variability in situ of the content of oxygen, nitrates and
silicic acid at two stations occupied for three days. It was found that
half the primary production is created in the lower part of the photosynthesis
layer. This picture is characteristic not only for the investigated area,
but also for the entire tropical zone of all the oceans. The quantity of
diurnal primary production under a unit area in summer for the particular
region was four times greater than indicated in the literature. According-
ly, there was also a greater rate of production and consumption of oxygen,
assimilation and regeneration of the principal biogenous elements. In the
photosynthesis layer in the tropics the daily consumption in oxygen and
regeneration of nitrogen and phosphorus compounds is 90-95 percent of the
diurnal oxygen production and the consumption of nitrates and phosphates.
(Abstract: "Rate of Chemical Processes in the Photosynthesis Layer in
the Tropical Atlantic," by V. N. Ivanenkov, V. V. Sapozhnikov, A. M.
Chernyakova and A. N. Gusarova, Institute of Oceanology; Moscow, Oceano-
logiya, Vol XII, No 2, 1972, pp 243-250)

-23-

AA0043435⁻   IVANETS   T.A.   UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 3-70

203921 A DEVICE FOR COOLING LIQUID SELF-HEATING
ANODE in electrolysers for the production
of aluminium, by means of metallic ribs with their
bottom ends immersed in the liquid anode, is char-
acterised in that in order to control temp. along
the surface of the anode and to change over the
device without stopping the electrolysis, the
cooling ribs are made in the form of sections
freely fixed to the anode . These sections are
made of steel beams and plates made of copper,
aluminium or other highly conducting metals.
The proposed device consists of steel beams 1
and plates 2. The latter are fixed to the beams 1
and are immersed half-way down their length in
the liquid anode. The temp. of the liquid anode
can be controlled over its whole area by decreasing
or increasing the number of sections and also the
number of plates in the sections. This cooling
unit can be replaced by a new one without stopping
the electrolysis process.   6.2.67. as 1133087/
22-1. M.A.KOROBOV et al. Irkutsk Aluminium Works
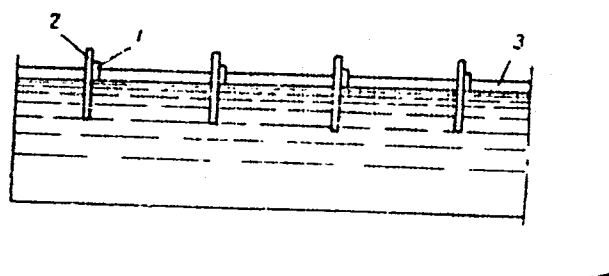(4.7.69.) Bul.10/10.3.69. Class 40c. Int.Cl.C22d.

19761762

AA0043435

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19761763

AA0043435

AUTHORS: Korobov, M. A.; Shul'ts, B. V.; Yanko, E. A.; Ivanets, T. A.; Sobol', I.I.
Kostevich, D. N.; Ratmanov, V. N.; Kulakov, A. N.; Kits – Kovyazina, A. A.

Irkutskiy Alyuminiyevyy Zavod

19761764

USSR

IVANILOV, YU. N., PETROV, A. A.   UDC 51

"Analysis of the Maximum Production Growth Rates for Given Finite Consumption of Products"

V sb. Issled. operatsiy. Modeli, sistemy, resheniya. Vyp. 3 (Operations Research. Models, Systems, Decisions. Vyp. 3 -- collection of works), Moscow, 1972, pp 3-19 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V512)

Translation: A study is made of the problem of determining the growth rates of multibranch production which is described by a dynamic model. It is proposed that the production is divided into two sectors one of which produces the product going only to satisfy a finite demand. A maximum production growth rate is defined for a given finite demand. If the possible finite demand is given by a system of linear inequalities, it turns out to be possible to construct an algorithm which offers the possibility of calculating the maximal production growth rate in a finite number of iterations.

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USSR   UDC 577.4

IVANILOV, YU. P., PETROV, A. A.

"Model of Planned Development of Manpower"

V sb. Issled. operatsiy (modeli, sistemy, resheniya). Vyp. 1 (Operations Re-
search (Models, Systems, Solutions). Vyp. 1 -- collection of works), Moscow,
Computation Center of the USSR Academy of Sciences, 1970, pp 5-9 (from RZh-
Kibernetika, No 7, Jul 72, Abstract No 7V527)

Translation: A study was made of the dynamic model of the planned development
of manpower. The model belongs to the balance sheet models. Many of the
sociological factors which determine the dynamics of manpower are not con-
sidered in explicit form. These factors are considered given, and to some
degree they are taken into account by the structure of the model. The model
describes centralized manpower planning.

1/1

USSR   UDC: 51:330.115

IVANILOV, Yu. P., PETROV, A. A.

"Dynamic Model of Expansion and Rearrangement of Production (π-Model)"

V sb. Kibernetiku -- na sluzhbu kommunizmu (Cybernetics to the Service of Communism--collection of works), T. 6, Moscow, "Energiya", 1971, pp 23-50 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V751)

Translation: A dynamic model of expansion and rearrangement of production is constructed which accounts for the possibilities of a change in the structure of production due to accretion, conversion of the capacities of one sector for turning out other goods, the possibilities of conserving and deconserving capacities with regard to time lags, noncoincidence of the production cycle in sectors, etc. D. Epshteyn.

1/1

IYANILOV, Yu. P., PETROV, A. A.

"Calculation of the Optimal Plan of Development of Production Using a Dynamic π Model"

Translation: A linear dynamic production model is studied, considering the differentiation of lags in construction and startup of facilities by branches. The controls used are vectors of the total output and planned increases in capacities of enterprises. Calculations using this model were performed for six branches. Linear change in coefficients of expanses with time are suggested. The goal function expresses the mean deviation for consumer goods from a certain fixed level (with a fixed structure) at the end of the plan period. The algorithm is based on the maximum principle. Results of calculations are presented. It is noted that one significant feature of the optimal plan is the creation of reserves and temporary under utilization of capacity.

1/1

USSR   UDC 51:330.115

IVANILOV, Yu. P., PETROV, A. A.

"Some Methods of Solution of the Problem of Optimal Planning for Dynamic Production Models"

Kibernetiku -- na Zluzhbu Kommunizmu. T. 6 [Cybernetics in the Service of Communism, Vol 6 -- Collection of Works], Moscow, Energiya Press, 1971, pp 51-64, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V705 by D. Epshteyn).

Translation: The discrete maximum principle is presented for dynamic models with phase limitations and without them. Two algorithms for search for the optimal control with phase limitations are presented, reducing the problem to determination of the optimal control for a certain loaded functional without phase limitations. An ALGOL program is presented.

1/1

USSR   UDC 51:330.115

IVANILOV, Yu. P., MOYISEYEV, N. N., PETROV, A. A.

"Some Mathematical Problems of Programmed Control of an Economic System"

Kibernetiku -- na Zluzhbu Kommunizmu. T. 6 [Cybernetics in the Service of Communism, Vol 6 -- Collection of Works], Moscow, Energiya Press, 1971, pp 9-22, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V702 by D. Epshteyn).

Translation: A program method of control of the national economy is defined. The program refers to a set of s operations which must be performed to achieve the desired goal. A program of development of production supporting the entire set of programs of development of an economic system is particularly noted. An s-digit number $z = k_1, k_2, \ldots, k_s$ is used to describe the state of the program, where k_i defines the degree of fulfillment of the ith operation in a scale selected such that all $k_i \leq m$ and $z = mm\ldots m$ means that the program has been fulfilled. A system of equations is concluded describing the fulfillment of a certain program for a simple multibranch dynamic production model. Control $u(t)$ refers to an s digit number containing the intensity of fulfillment of the ith operation at moment t in the ith digit. A dead end control refers to a control under which it is impossible to increase the intensity of fulfillment of any

1/2

operation due to resource limitations. It is proven that the dead end control
include the control providing for fulfillment of the program in the minimum
time. A search algorithm is constructed leading to the construction of this
optimal control with a maximum excess of resources at the end. An arbitrary
example of calculation of a program for a linear, single-product model is pre-
sented.

2/2

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USSR

UDC: 51:330.115

IVANILOV, Yu. V., PETROV, A. A.

"Dynamic Model of Expansion and Rearrangement of Production (π-Model)"

V sb. Kibernetiku -- na sluzhbu kommunizmu. T. 6 (Cybernetics in the Service of Communism--collection of works. Vol 6), Moscow, "Energiya", 1971, pp 23-50 (from RZh-Matematika, No 11, Nov 71, Abstract No 11V751)

Translation: A dynamic model is constructed for expansion and rearrangement of production, taking account of the possibilities for a change in the structure of production due to accumulation and conversion of the facilities of one sector for producing another type of goods and the possibilities of inhibiting and deinhibiting of facilities with regard to lags in time, non-coincidence of the production cycle in sectors, etc.   D. Epshteyn.

1/1

USSR   UDC: 539.4:624

IVANISHCHEV, V. F.

"On the Problem of Calculating Hydraulic Structures for Seismic Effects"

Tr. Vses. proyektno-izyskat. i NII "Gidroproyekt" (Works of the All-Union Institute of Preliminary Study and Design, and of Scientific Research in the Planning of Hydraulic Structures), 1971, sb. 20, pp 32-41 (from RZh--Mekhanika, No 7, Jul 71, Abstract No 7V895)

Translation: The author discusses some problems in connection with using the spectral theory of seismic resistance for hydraulic structures. Derivation of basic relationships is given for determining seismic inertial loads according to the spectral theory, possible simplifications of these relationships and recommendations on using them with regard to specific singularities of the work of hydraulic structures as structural elements with distributed mass and a developed support contour. A discussion is presented on the principles of assigning computational coefficients of seismicity for hydraulic structures based on a general algorithm for analyzing seismic effects on the structures and the computational quantities which characterize the strength and stability of the structure. In this connection, it is recommended that the computational values of the coefficient of seismicity be increased, using data on seismic accelerations in the MSK-64 scale. Author's abstract.
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